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ABSTRACT

An annotated bibliography on music, higher education, and technology includes 27 journal articles and 6 books, most dated 1980 or later. The following topics are covered: resource groups with expertise in the music educational application of computers, manufacturers dealing with educational technology products, information on the National Consortium for Computer-Based Music Instruction, information on computer software available for music educators to use in the classroom, advantages/disadvantages of using the Synclavier II as a teaching device, the Graded Units for Interactive Dictation Operations system (a computer-based ear-training and music theory program), a classroom simulator used to train music teachers about the problems of performance preparation, information on the development of computer-assisted instruction (CAI) since the late 1960s, the importance of computer literacy by music teachers, the application of CAI at nine National Association of Schools of Music institutions, research applications in music CAI, the use of computer technology to the nontechnical music educator, an update on synthesizers, alternatives to CAI, teacher training and high technology, microcomputer-based music teaching, televised music instruction, programmed teaching, and electronic music for young people. (SW)

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MUSIC, HIGHER EDUCATION, AND TECHNOLOGY

ANNOTATED BIBLIOGRAPHY

Periodicals

Anonymous. "Databank: Experts on Educational Uses of Computers," Music Educators Journal, 69, No. 5:71-73. January, 1983.

A compilation of 46 organizations, agencies, and individuals with expertise in the music educational application of computers. The list was compiled from a variety of sources by the editors of Music Educators Journal.

_____. "Industry Resources Directory," Music Educators Journal, 69, No. 5:75-77. January, 1983.

A list of 40 manufacturers dealing with educational-technology products. Specific products of interest to music educators are mentioned.

_____. "National Consortium for Computer-Based Music Instruction," Music Educators Journal, 69, No. 5:69. January, 1983.

A short article describing the National Consortium for Computer-Based Music Instruction (NCCBMI), the largest of the interest groups that comprise the Association for the Development of Computer-Based Instructional Systems (ADCIS), an international, nonprofit organization that sponsers a yearly, five-day conference. NCCBMI "provides a forum for the exchange of ideas among developers and users of computer-based systems for music instruction; maintains a library of music courseware; reduces redundant effort among courseware and hardware developers; and provides consultation for new users of computer-based music instruction."

_____. "What's New in the Music Industry-Part II," The Instrumentalist, 38, No. 8:12-15. March, 1984.

Includes an updated compilation of computer software available for music educators to use in the classroom.

Appleton, Jon. "The Synclavier: A Complex Tool for Performance, Teaching, and Composition," Music Educators Journal, 69, No. 5: 67. January, 1983.

A discussion by one of the leading keyboard teachers in higher education on the advantages and disadvantages of using the Synclavier II as a teaching device. The author, as one of the developers of the instrument, intended it to be used soley as a performance instrument, but now further applications are being utilized.

Arenson, Michael A., and Fred T. Hofstetter. " The GUIDO System and the PLATO Project," Music Educators Journal, 69, No. 5:46-51. January, 1983.

The GUIDO (Graded Units for Interactive Dictation Operations) system, a computer-based ear-training and music theory program, was developed at the University of Delaware by the authors in 1974, an the PLATO project was developed at the University of Illinois. The complete system, now available nationally, is designed to supplement or replace the standard college music theory program.

Buehning, Walt, and Erv Schieman. "Simulation Can Teach Teachers," Music Educators Journal, 69, No. 5:54-55. January, 1983.

A combination of computer-based instruction with videotape technologies at the University of Calgary resulted in a classroom simulator used to train future music teachers how to deal with the problems of performance preparation. A student watches a situation develop on the video monitor, then is faced with a decision. A series of choices are displayed on the screen, the student chooses one, and the results of that decision are then portrayed on the monitor. This system developed out of the need for college music students preparing for future band/choir directing positions to have decision-making experience prior to actually assuming the full responsibilities of a teacher.

Eddins, John. "A Brief History of Computer-Assisted Instruction in Music," College Music Symposium, 21, No. 2:7-14. Fall, 1981.

Traces the development of computer-assisted instruction(CAI) in music from the late 1960s to the present. Discusses early attempts at pitch perception and ear training, the PLATO system, the GUIDO system, the AMUS system, and other developments, including the formation of the National Consortium for Computer-Based Musical Instruction (NCC-BMI) and the Center for Music Research (CMR).

Franklin, James L. "What's a Computer Doing in My Music Room?" Music Educators Journal, 69, No.5:28-32. January, 1983.

This article begins with a "call for a new literacy," advising music teachers of their need to keep up with technology or face being passed over as administrators recognize the need for computer literacy. The article makes an attempt at answering that call by introducing the elements fo computer technology to the reader. The article recognizes eight advantages and six disadvantages fo computer-assisted instruction.

Gross, Dorothy, and Roger E. Foltz. "Ideas on Implementation and Evaluation of a Music CAI Project," College Music Symposium, 21, No. 2:22-26. Fall, 1981.

Provides a step-by-step account of the development of a computer-assisted project in music fundamentals at the University of Nebraska-Omaha and the University of Minnesota. The resulting computer lessons, known as MUSFUND, are now available for use at other colleges and universities.

Hofstetter, Fred T. "Applications of the GUIDO System to Aural Skills Research, 1975-80," College Music Symposium, 21,No.2:46-53. Fall, 1981.

Reviews the development of the GUIDO (Graded Units for Interactive Dictation Operations) system of ear training programs at the University of Deleware beginning in 1974. The system consists of a PLATO terminal and a digital music synthesizer. All questions and students' answers for the last five years have been saved in a student data bank and analyzed. This analysis has covered four main areas:

1. Recognition of perceptual patterns;
2. Discovery of data dispelling commonly held beliefs;
3. Controlled evaluation of instructional methods;
4. Effects of difficulty upon learning style and of the use of student options upon achievement.

_____. "Microelectronics and Music Education," Music Educators Journal, 65, No. 8:38-45.

Discusses the application of computer-assisted instruction at nine National Association of Schools of Music (NASM) schools.and the capabilities these applications possess:

1. individualizing instruction;
2. emphasizing the intrinsic joy of learning and deemphasizing competition with peers as a motivating force;
3. encouraging students to tailor learning experiences to meet their own objectives;
4. giving immediate feedback;
5. saving time.

The article goes on to discuss five stand-alone microelectronic music systems available, the PLATO and GUIDO systems, and the National Consortium for Computer-Based Music Instruction (NCCBMI).

Killam, Rosemary N. "Research Applications in Music CAI," College Music Symposium, 21, No. 2:37-44. Fall, 1981.

Since many schools of higher education are considered "research" institutions, the use of computer-assisted instruction in these schools needs to be explored. This article sites four areas research institutes can aid in the development of music CAI:

1. research in modeling the student;
2. research in curriculum design;
3. research in hardware and software;
4. research in data saving and analysis.

The article concludes by stating: "Once a system is operational, continued research is needed to evaluate the system's effectiveness and to plan future modification and expansion."

Kuzmich, John, Jr. "Computers for Music Teachers," The Instrumentalist, 38, No. 9:10-14. April, 1984.

An overview article designed to introduce the use of computer technology to the non-technical music educator, the article discusses available hardware, software, and how to get started. It goes on to supply sources of information about available software and summer music computer workshops.

Muro, Don. "Setting Up Today's Music Studio," Music Educators Journal, 69, No. 5:66. January, 1983.

A short article that discusses essential and nonessential equipment needed to outfit any school's electronic music studio.

_____. "Synthesizer Update," Music Educators Journal, 69, No. 5:63-65. January, 1983.

Divides synthesizers into two types, preset and variable, and discusses various development such as: polyphonic capabilities, recall ability, touch-sensitive keyboards, playing modes (polyphonic, unison, double, and split), sequencers, and analog/digital synthesizers.

Pembrook, Randall G. "Music for the Eyes: Slides/Tape and Videotape Techniques," Music Educators Journal, 69, No. 5:55-57. January, 1983.

This article presents modern, yet less expensive, alternatives to computer-assisted instruction. The two main options presented are: 1) a slide/tape system, which utilizes a slide projector and a special synchronizing cassette recorder, and 2) a videotape system, which utilizes a video-recorder and a monitor. The applications of the two systems are discussed.

Peters, G. David. "Hardware-Development for Computer-Based Instruction," College Music Symposium, 21, No. 2:15-21. Fall, 1981.

A survey of the "tangible domain of computer development" (hardware) as it applies to the use of computers as an educational tool in music, this article analyzes "computer music hardware" in three categories:

1. Random-access audio playback/record;
2. Computer sound synthesis and generation;
3. Computer analysis of music performance.

_____. "Teacher Training and High Technology," Music Educators Journal, 70, No. 5:35-38. January, 1984.

Relates the use of computer-assisted instruction to the field of teacher training in the area of music. The article discusses terminology ("baud rate," "ROM," "floppy disk," etc.), application, hardware and software, and resources.

Sherbon, James W. "Chips and Diodes of Microcomputers," Music Educators Journal, 69, No. 5:32-38. January, 1983.

An introductory article designed to help the reader understand computer systems, with three available systems used as examples. Educational applications are sited, and noneducational applications, such as inventory, music library holdings and classifications, budget management, auditions, marching band charting, etc., are explored.

Shrader, David L. "Microcomputer-Based Teaching," College Music Symposium, 21, No. 2:27-36. Fall, 1981.

Reviews the development of interest on the part of administrators in the area of computer-assisted instruction in music and sites specific applications of computers in music. The article discusses several current music computer programs developed or in the process of being developed.

Taylor, Jack A. "Computers as Music Teachers," Music Educators Journal, 69, No. 5:43-45. January 1983.

Discusses the use of "computer-based instruction" (CBI), with an emphasis on the use of peripherals added to the computer to enhance its use. A scenario of possibilities in the near future is presented, and a discussion of the growth of CBI is included.

Turrietta, Cheryl R. "Building a Music System," Music Educators Journal, 69, No. 5:52-53. January, 1983.

Introduces the Musicsystem, a sixteen-voice digital synthesizer manufactured by Monntain Computer, Inc., as a relatively low-cost, comprehensive music system developed for use on the Apple II computer. The Musicsystem is divided into four parts: 1) the Music Editor, 2) the Music Player, 3) the Music Merger, and 4) the Instrument Definer, all of which are detailed in the article. Passport Designs, Inc., manufactures a keyboard synthesizer called the Soundchaser Digital and software entitled Music Tutor and Notewriter, all of which coordinate with the Musicsystem.

Upitis, Rena. "Milestones in Computer Music Instruction," Music Educators Journal, 69, No. 5:40-42. January, 1983.

Traces the development of computer-assisted instruction (CAI) from its birth in the late 1960s to the present, the article highlights the PLATO system developed at the University of Illinois, the LOGO system developed at the Massachusetts Institute of Technology, and the ALF system developed for the Apple computer.

Williams, David Brian. "Microcomputers Interface with the Arts," Music Educators Journal, 69, No. 5:39. January, 1983.

Discusses the use of computers in the areas of music, art, and theatre at Illinois State University as a result of a collaboration between the College of Fine Arts and the Applied Computer Science program. The two disciplines share a microcomputer laboratory that is equipped with twenty disc-based Apple II computers and special hardware devices for sound and graphic. The lab serves over 600 students per week.

Wolfe, George. "Creative Computers-Do They Think?" Music Educators Journal, 69, No. 5:59-62. January, 1983.

Discusses the development of research into Artificial Intelligence (AI) and its applications to music. The use of a twelve-tone row and and Apple II Plus computer illustrate the computer's ability to compose and create.

Zinar, Ruth. "Using Visual Meida In Music Instruction," The American Music Teacher, 28, No. 5:20-21. April/May, 1979.

A documentation of research that has shown a corrolation between the use of visual aids and an advanced learning experience, and an exposition of various visual aids available to aid a teacher of music. The use of transparencies, audio-filmstrips, films, prepared charts, pictures, and diagrams is also discussed.

Books

Carpenter, Thomas H. Televised Music Instruction, Washington, D.C.: Music Educators National Conference, 1973.

This book serves four purposes:

1. provides basic information about using instructional television in music education for those who are not involved in this medium;
2. supplies information about the approaches and procedures followed in other instructional television centers for those already involved in televised music instruction;
3. serves as a reference for preservice music educators who have had little or no opportunity as students to learn about the possibilities of televised music instruction;
4. encourages researchers to investigate problems related to televised music instruction.

The book is divided into two parts: 1) classroom televised music instruction and 2) problems, issues, and directions.

Roucek, Joseph, ed. Programmed Teaching, New York: Philosophical Library, 1965.

This book begins by discussing the teaching machines popular in the early 1960s and proceeds to expound on the effectiveness and future of automation in education and the use of programmed teaching. In the discussion on programmed teaching the book recognizes the fact that, at the time of publication (1965), little had been done in the area of music, although one programmed text in music is sited as an example of what can be done in music.

Taylor, Robert P.,ed. The Computer in the School: Tutor, Tool, Tutee, New York: Teachers College Press, 1980.

This book is a compilation of reports by respected leaders in the field of computer-assisted instruction. The history and development of CAI is traced, and future implications are discussed. Although the book relates the use of computers to all areas of education, specific applications to music are included.

Thomas, James L., ed. Microcomputers in the Schools, Phoenix, Arizona: Oryx Press, 1981.

The book is divided into four parts:

1. Considerations in selection;
2. Hardware and software development;
3. Applications in the curriculum;
4. Trends and Issues.

These parts are compilations of educational journal articles previously published, and now collected into large areas. Five appendices are

included to cover terms, resources, funding sources, etc. Several music programs are sited and their sources are included.

Weinstock, Ruth, ed. Communications Technologies in Higher Education, Washington, D.C.: Communications Press, Inc., 1977.

A collection of twenty-two "profiles" detailing the use of computers and other technologies on twenty-two college campuses. Several of these profiles include the use of technology to music in higher education.

Willman, Fred. Electronic Music for Young People, New York: The Center for Applied Research in Education, Inc., 1974.

Designed to introduce students, from elementary grades to higher education, to the use of technology in music-making. Sources of electronic sounds (computers, tape recorders, synthesizers, etc.) are discussed.